

Abstract Submitted
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Functionalized polymeric nanotubes CECILE MALARDIER-JUGROOT, Royal Military College of Canada — New nanomaterials already play a key role in several emerging technologies such as nanomotors, nanoelectronics and drug delivery. The increased interest in nanotechnology comes from the fact that nanoscale materials have new physical and chemical properties compared to the bulk. Among the methods used to fabricate new nanomaterials, the most successful in producing precise structure, is the bottom-up method which builds the desired products from the atomic or molecular scale by self-assembly. We will present a new self-assembly process of amphiphilic alternating copolymers into nanotubes combining a computational (molecular modeling) and experimental (small angle neutron scattering, atomic force microscopy) characterization. The nanoarchitecture, predicted by numerical methods and characterized experimentally, has an internal diameter of about 28 Å and an external diameter of about 41 Å. In addition, the combined characterization of the nanotube revealed that the interior of the tube is hydrophobic while the exterior is hydrophilic. The self-assembly will be illustrated by the association of poly(styrene-alt-maleic anhydride) and the effect of the functionalization of the polymer chain on the forces stabilizing the nanotubes (hydrogen bonds, $\pi - \pi$ interactions) will be presented.

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